

REMARKS

Claims 2-3, 8, 12, and 19-20 were rejected as indefinite. Applicant requests reconsideration. The claims have been accordingly amended. The term "identifier" was removed from the claims. In reading the claims, there are originating, proximal, distal, source, and destination caches, having respective URLs and IPA. To aid understanding and resolution, caches, URLs and IPAs are referenced.

Claims 1-4, 6, 8, 9, 11, 12, and 14-20 were rejected as unpatentable over Jordan in view of Garcia. Claims 7, 10, and 13 were rejected as unpatentable over Jordan in view of Garcia in view of Bertis. Applicant requests reconsideration. Applicant now responds to respective examination a-f comments.

a) The examiner states that claim 1 does not reference the tri-reference association. Anyone skilled in the art must realize that in order to send a message to a destination through the web, the destination IPA must be included. The tri-referenced information includes the originating URL, the source IPA, and the destination IPA. That is, the routing information sent must necessarily include the originating URL, the source IPA, and the destination IPA.

b) The examiner states that Jordan transmits routing information (such as source address, destination address, forwarding address, next hop address as disclosed upon request). What is strikingly missing from this list is the necessary originating URL.

1  
2 c) The examiner states that transmitting to one destination is not  
3 broadcasting and that claim preambles do not limit the claims. If  
4 the preamble is not a limitation, then the reference to  
5 broadcasting in the preamble, respecting claim 1, seems misplaced.  
6 Surely the communication to one destination cache is a minimal,  
7 point-to-point broadcast, but a broadcast nonetheless. Claims 11  
8 and 14 particularly claim repeating the communication, which  
9 perfects a wide-area broadcast. Also, the destination can build a  
10 forwarding and routing table from the receipt of a plurality of  
11 routing information. Broadcasting and table maintenance are the  
12 uses of the claimed tri-reference communication. Applications and  
13 uses are spelled out in the preamble, not as limitations, but as  
14 uses and applications. While uses and applications are not recited  
15 element limitations, they nonetheless go to obviousness, in that,  
16 the problem solved is relevant, to wit, building a URL-to-distal  
17 cache routing table through broadcasting. Hence, applicant's  
18 discussion as to obviousness and the problem solved brings in  
19 discussion of broadcasting for forming the distal routing table.

20       Applicant devised tri-reference routing information to solve  
21 the prior art problem. The tri-reference routing information  
22 communication is the solution, to solve the problem of distal table  
23 maintenance. In this regard, Jordan and Garcia have no commonality  
24 with which to arrive at the present invention. Communication of  
25 routing information by Jordan and the maintenance of table in  
26 Garcia are not related in any regard, and the combination of them  
27 does not suggest the invention in any regard. The examiner has  
28 simply taken isolated features and combined them based upon

1 forbidden hindsight reconstruction. Jordan does not communicate the  
2 tri-reference information. And Garcia does not receive the tri-  
3 reference information nor use tri-referenced communicated routing  
4 information to maintain tables.

5  
6 d) The examiner first indicated that the claims do not recite a  
7 table. Hence, claims 19 and 20 were added. Applicant is claiming a  
8 method of communicating tri-referenced routing information that can  
9 be broadcast and that can be used to build routing tables in  
10 receiving distal caches. The examiner states that Garcia discloses  
11 broadcasting the routing update messages comprising routing  
12 information. Yet the examiner did not recite what exactly is that  
13 information, which particularly relates to Internet Protocol packet  
14 routing in the case of Garcia. Furthermore, Garcia does not  
15 communicate tri-referenced routing information that includes an  
16 originating URL. Both Jordan and Garcia do not communicate tri-  
17 referenced routing information and both particularly do not  
18 communicate the originating URL. Without source IPA, originating  
19 URL, and the destination IPA, combined as routing information,  
20 which may incidentally be wide-area broadcast and used to build  
21 routing tables, Jordan and Garcia cannot possibly suggest the claim  
22 inventions.

23  
24  
25 e) The examination's inability to recognize the invention, led the  
26 applicant to assist the examiner though the inclusion of claims 19  
27 and 20 wherein the tri-referenced routing information is actually  
28 used to build routing tables. Prior to adding new claims 19 and 20,

1 routing tables were not claimed. Applicant will assist the examiner  
2 as necessary to fully gain understanding of the inventions and the  
3 prior art.

4  
5 f) The terms hop, path, link, are well understood by those skilled  
6 in the art. There is no ambiguity.

7  
8 The claims were rejected in part because the claims do not  
9 recite intended applications of the method steps for broadcasting  
10 associated routing information or recite arguments used in support  
11 of non-obviousness. These rejections are misplaced. The examiner  
12 states, on page 4, "In other words, the features upon which  
13 applicant relies, (as in applicant's arguments), are NOT recited in  
14 the rejected claims". This is a common perfunctory rejection often  
15 correctly used by examiners in anticipation rejections, but so  
16 often misplaced in the context of obviousness rejections.

17  
18 In claim 1, applicant claims a method of broadcasting, which  
19 method is executed solely at the proximal cache, AND NO MORE. This  
20 claim clearly sets the reference perspective as being the proximal  
21 cache at the proximal IPA. As such, a potential infringer has to  
22 notice that a proximal cache, so broadcasting, that is merely  
23 broadcasting without regard to creating a forwarding and routing  
24 table at a destination, perfects the method and is covered by the  
25 claim. With this broadcasting method, a routing and forwarding  
26 table at the destination can then be maintained at a distal cache.  
27 As such, applicant claims the method of broadcasting only in so far  
28 as the execution is exclusively performed at the proximal cache.

1  
2       There is no requirement that claim 1 also includes language as  
3 to the intended uses or applications of this broadcasting method or  
4 requirement that this claim claims the benefits of this  
5 broadcasting method, as the examiner incorrectly suggests. An  
6 obviousness determination is focused upon whether or not the  
7 claimed combination is obvious. The determination of obviousness  
8 goes to both the solution as in part claimed in claim 1 and the  
9 problem solved as stated in the argument. As to the solution in  
10 part, the combination of claim 1 has not been rejected as  
11 anticipated, but rejected for obviousness. Anticipation can be  
12 determined by an element-by-element comparison. Applicant did not  
13 address an anticipation rejection, where elements must be recited  
14 in the claims and not found in a single prior art reference. If  
15 applicant had argued that claim 1 was not anticipated because the  
16 prior art does not teach a destination routing table in  
17 combination, then the examiner's assertion would have been correct,  
18 and the routing table should be recited in the claims. However, the  
19 rejection is one of obviousness that brings into consideration a  
20 whole variety of related issues, such as, a long felt need without  
21 solution, and of course, the prior art problems solved. Surely, the  
22 examiner would not suggest that the claims must specifically recite  
23 the number of years that the prior art had such a long felt need,  
24 or necessarily recite the prior art problems solved, yet these two  
25 things do support a non-obviousness determination. Arguments that a  
26 claimed invention is not obvious need not be recited in the claims.  
27 It is simply enough that the combination not be anticipated, as  
28 indicated in the present record, and that the combination of claim

1 1, not be obvious. It is simply enough that the claimed  
2 broadcasting method steps in combination not be suggested, yet be  
3 useful. The reasons why a claim combination would not be obvious  
4 need not be recited in the claims. The examiner's basis for  
5 rejection because applicant's arguments are not found in the claims  
6 is without merit in the present obviousness determination context.

7  
8 The claims are patentably distinct as written. New claims 19  
9 and 20 add another step to claims 1 and 8 respectively of storing  
10 the association in the destination cache at the destination IPA,  
11 whereat a forwarding and routing table can be maintained. Hence,  
12 the use of the claimed combination of the broadcasting method of  
13 claim 1 then enables the creation of forwarding and routing tables  
14 at the destination IPA, and hence, enables the migration of routing  
15 information containing associations between URLs and source web  
16 cache IPAs subsequently stored as routing items in forwarding and  
17 routing tables at destination IPAs. Significantly, the claim 1  
18 steps provide a method of broadcasting routing information that can  
19 then be used by other distal caches for accomplishing the migration  
20 of forwarding and routing tables. Claim 1 claims a broadcasting  
21 method and not the creation of forwarding tables as now claimed in  
22 new claims 19 and 20. Surely, this unanticipated and unobvious  
23 broadcasting method is of some value.

24  
25 From a practical perspective, the examiner should realize that  
26 networks have distributed caches that can be manufactured by  
27 various entities. Claim 1 only covers a broadcasting cache that is  
28 the proximal cache, and hence, covers a necessary element to

1 forwarding and routing table migration within an entire network.  
2 Claim 1 covers a necessary novel core of the invention because,  
3 without this broadcasting of routing information, a distal  
4 forwarding and routing table cannot be maintained by a proximal  
5 cache. Hence, claim 1 focuses on a core point of novelty while  
6 providing clear notice of the scope of the claim. Other systems do  
7 have caches, and do have forwarding tables, and do have routing  
8 tables, but do not broadcast tri-referenced associated routing  
9 information. Hence, the focus of claim 1 is directed to a necessary  
10 point of novelty. The threshold point of novelty is the  
11 broadcasting of tri-referenced associated routing information. This  
12 broadcasting does not include process steps occurring at the  
13 destination cache, so that one can determine from claim 1, which  
14 caches within a network are covered by claim 1, and which ones are  
15 not. As such, the process steps of claim 1 are executed only at the  
16 proximal IPA, give clear notice as to what would infringe, and  
17 focus the examination of this case. This claim 1 strategy provides  
18 clear notice, covers a necessary point of novelty, and focuses this  
19 examination on to that the point of novelty, which is the  
20 broadcasting method of claim 1.

21  
22 As such, the present invention of claim 1 serves to solve the  
23 problems of maintaining a network of cooperative caches through the  
24 migration of forwarding and routing tables by broadcasting tri-  
25 referenced associated routing information. The present invention  
26 solves the problem of routing table migration by broadcasting from  
27 a first proximal cache to a second destination cache at a  
28 destination IPA routing information that associates a URL-Id and a

1 third source IPA. These first, second, and third caches are clearly  
2 referenced in claim 1. The associated information includes a tri-  
3 referenced destination IPA, originating URL, and a source IPA. This  
4 association is recited in claim 1. Claim 1 is particularly recited,  
5 novel, unobvious, and useful.

6  
7 The destination cache need not necessarily store the sought  
8 after web content data, but only maintain routing items that define  
9 where the web content data may ultimately be located through  
10 routing and forwarding, and ultimately stored among the cooperative  
11 caches. The web content data specified by the URL can be  
12 alternatively cached in and retrieved from a source cache for  
13 improved distributive web content data caching. As such, the  
14 present invention solves the problem of maintaining cooperative  
15 cache forwarding and routing tables by broadcasting tri-referenced  
16 associated routing information. The tri-referenced associated  
17 routing information including the URL, source IPA, and the  
18 destination IPA, can then be used to create a forwarding and  
19 routing table in any arbitrary distal cache, so as to migrate the  
20 forwarding and routing table information about the cooperative  
21 caches. This migration occurs without regard to load balancing,  
22 polling, frequency monitoring, or the mere transmission of URL  
23 requests from any one cache to another cache as in Jordan.

24  
25 Applicant appreciates that many web features are found in  
26 various methods operating on various caches in cooperative systems,  
27 and that, the examination can become quickly confused if one is not  
28 careful to focus on the broadcasting steps of claim 1 in reference



1 to any sole proximal cache, as in Jordan. Applicant was well aware  
2 of this potential problem. To make the examination process as  
3 focused and as convenient as practicable, claim 1 is directed only  
4 to the minimal novel broadcasting steps executed by a single lone  
5 proximal cache, so that, operational steps by any other lone cache,  
6 such as in Jordan, can be quickly compared for novelty. Does this  
7 prior art reference, Jordan, teach or suggest a single cooperative  
8 proximal cache executing these tri-referenced associated  
9 broadcasting steps? This determination is limited in scope to aid  
10 in the examination process. When viewing Jordan, a like reference  
11 perspective to a "proximal cache" serves to quickly clarify the  
12 comparison and highlight the points of novelties.

13  
14 That is, the examiner should compare apples to apples, and any  
15 lone cache in Jordan can be compared to the proximal cache of claim  
16 1. However, because all of Jordan's caches operate in like manner,  
17 any one cache in Jordan may be used for comparison. In this regard,  
18 the migration and creation of forwarding and routing tables can be  
19 had through a unilateral tri-referenced associated broadcast  
20 communication from a broadcasting proximal cache as in claim 1. A  
21 distal cache can then use this broadcast communication for building  
22 a forwarding and routing table as recited in claims 19 and 20. For  
23 example, when the destination cache receives a URL request, the  
24 request can be routed and forward to the source cache and not the  
25 originating cache. As such, claim 1 and claim 19 highlight  
26 respective bifurcated functions for migrating forwarding and  
27 routing tables. Jordan relies on like caches whereas the proximal  
28 cache of claim 1 and the distal cache of claim 19 rely on a

1 cooperation between differently operating caches, yet another clear  
2 distinction between Jordan and the present invention.

3  
4 Jordan teaches a load-balancing network of like cooperative  
5 caches that store web content data and maintain caching tables.  
6 Jordan does not solve the problem of migrating forwarding and  
7 routing tables about a network of caches. Jordan does not use the  
8 claim 1 solution of transmitting from a proximal cache to a  
9 destination cache tri-referenced routing information associating a  
10 URL with a source IPA of an alternative source storing or pointing  
11 to where the URL's web content data may be subsequently retrieved.  
12 In so doing, the invention of claim 1 serves to enable the  
13 migration of the forward and routing information about the  
14 cooperative distal caches that can then create forwarding and  
15 routing tables arbitrarily anywhere in the cooperative network.

16  
17 Jordan teaches that when a cache is overloaded by a URL  
18 request, the URL request is directed to another destination at a  
19 destination IPA, so that the destination, that may store the web  
20 content data, can then function as a new alternative source. As  
21 such, the destination can retrieve the web content data, store it  
22 locally, and then respond to URL requests for the web content data  
23 so as to load share. As such, the destination and source are one in  
24 the same. Jordan does not solve the problem of migrating forwarding  
25 and routing tables among cooperative distal caches. Jordan does not  
26 suggests the invented solution of broadcasting to a destination  
27 distal cache tri-referenced routing information associating the  
28

1 destination IPA with a URL indicating that web content data can be  
2 found in an alternative source cache.

3  
4 In Jordan, a proximal cache at a proximal IPA receives a  
5 request for URL web content data from an originator or client  
6 browser. When the proximal cache at the proximal IPA is overloaded,  
7 the proximal IPA redirects the original request to a destination  
8 IPA also storing the web content data. The request is forwarded to  
9 a destination as an alternative source. The request contains an  
10 association between the requesting IPA and the URL of the  
11 originator originally firstly storing the requested web content  
12 data. Then, the destination cache stores the web content data to  
13 serve URL requests. The destination retrieves the URL web content  
14 data, stores it locally, and updates its caching table indicating  
15 it has stored this URL web content data. Jordan teaches load  
16 sharing. Jordan does not teach a method of broadcasting tri-  
17 referenced routing information, including an association between  
18 URL-Id and an alternative source of the URL-Id web content data and  
19 a destination, but rather directs the URL request to an unloaded  
20 server storing the sought after URL data. Jordan does not teach a  
21 method of broadcasting an association of a source with a URL to an  
22 arbitrary destination that can then construct and maintain a  
23 routing and forwarding table.

24  
25 Jordan teaches a load-balancing web content data caching system  
26 that maintains a logical central directory for locating where  
27 requested web data is stored, preferably in the least loaded cache.  
28 (Col 7 lines 60-65). In Jordan, there is a guarantee that the owner

1 indicated in the directory does store the sought after web content  
2 data. By contrast, the present invention makes no such guarantee,  
3 as the routing information merely provides a direction through  
4 which a request could be forwarded or routed until a source cache  
5 is eventually reached that does store the sought after web content  
6 data specified in the URL request. The broadcasting of claim 1  
7 provides the routing information, including the destination IPA,  
8 the URL, and the source IPA, and not the web content data.

9  
10 The present invention provides for the broadcasting of routing  
11 information from a proximal IPA. The routing information at the  
12 proximal cache at a proximal IPA location is a tri-referenced  
13 association associating the destination cache at a destination IPA,  
14 and a source cache at a source IPA, and the URL. The associated URL  
15 request for web content data originally provided at a originating  
16 URL IPA is an implied fourth location. The physical locations are  
17 the proximal IPA, source IPA, the destination IPA as particularly  
18 stated in claim 1, while a fourth location of the original URL IPA  
19 location is also inferred. This specifically required tri-  
20 referenced association of the destination IPA, source IPA and URL,  
21 as recited in claim 1, is essential to understanding the novelty of  
22 claim 1 that then enables the migration of forwarding and routing  
23 tables. The destination IPA, originating URL, and source IPA  
24 association includes routing information associating a source IPA  
25 and the URL during broadcasting, which then enables the building of  
26 a forwarding and routing table at the destination distal IPA.  
27 Jordan does not have this tri-referenced association or the  
28 capability of migrating forwarding and routing information through

1 unilateral broadcasting. Jordan does maintain a caching table,  
2 which can be used to forward URL requests. However, the caching  
3 table is not maintained by virtue of receiving unilateral broadcast  
4 tri-referenced associated routing information. The caching table is  
5 not maintained by virtue of receiving unilateral broadcast routing  
6 information because, in Jordan, at least two of the claimed tri-  
7 referenced IPA locations, if not all three, are the same locations.  
8 In Jordan, the source and destination are one in the same, which  
9 receives a request, retrieves the URL data, updates its caching  
10 table, and becomes the alternative source, and hence, the  
11 limitation to only caching tables indicating exactly where is  
12 stored the requested web content data.

13  
14 In view of the abstract of Jordan, a "request" indicating a  
15 requester at a requester IPA and indicating the "object", that is  
16 the requested URL web content data, is "forward" directly to  
17 another cache, so that the "requests" are shifted, that is, forward  
18 to another cache also storing the sought after web content data.  
19 Jordan does not use routing in any regard, as the examiner  
20 incorrectly suggests. Jordan migrates web content data and forwards  
21 requests when overloaded. Jordan's shifting by forwarding requests  
22 perfects load balancing among caches. As such, Jordan maintains a  
23 directory as a correctly named caching table of all caches storing  
24 the sought after web content data for forwarding when overloaded.  
25 That is, all of Jordan's caches are merely source caches sharing  
26 loads by forwarding requests. There is a difference between a  
27 caching table and a forwarding and routing table. A caching table  
28 points directly to alternative source caches having the stored

1 data. A forwarding and routing table points to another location  
2 that may or may not have the stored data, but ultimately indirectly  
3 points through a path along which a request is routed and  
4 forwarded, hopping from one cache to another, to where the data may  
5 be ultimately found. When a proximal cache is overloaded in Jordan,  
6 the proximal cache sends the URL request, which is not used as  
7 routing information, to an alternate cache location, at an  
8 alternate destination. (See Figure 3) As such, each proximal cache  
9 monitors the frequency of the requests, and if overloaded, each  
10 proximal cache searches its caching table directory to find other  
11 caches storing the same web content data, and forwards the request  
12 to the alternate source cache. In this manner, load balancing and  
13 web content data sharing is achieved.

14  
15       Jordan forwards a URL request to a destination source cache,  
16 being both a destination and a source. Each cache in Jordan is a  
17 proximal cache, a destination cache, and ultimately a source cache,  
18 each maintaining a respective like caching table. The communicated  
19 URL requests or polling inquiries are simply not routing items  
20 having a tri-referenced association between a destination IPA, a  
21 source IPA, and a URL enabling a migration of forwarding and  
22 routing tables. The polling in Jordan is a bilateral communication,  
23 and not a unilateral communication. Jordan does not communicate  
24 from one proximal cache to a destination cache indicating that data  
25 is available through, but not necessarily at, yet another source  
26 cache. Jordan's caches do inquire through multicast polling where  
27 the information is stored for maintaining the caching table. When  
28 stored at the destination, the proximal overloaded cache sends the

1 URL request to the destination to load share. In Jordan, there is  
2 no tri-referenced associated routing information broadcast from a  
3 proximal cache to a second destination cache indicating a direct  
4 forwarding or indirect routing path to where the web data is stored  
5 on a third source cache. In Jordan, there is no routing information  
6 whatsoever, but rather, mere requests to send web content data to a  
7 requester or polling inquiries. In Jordan, an overloaded proximal  
8 cache searches its caching table directory, and then communicates  
9 and forwards the request from a proximal cache to a distal  
10 destination also serving as an alternative source cache. As such,  
11 Jordan does imply operation among three locations including a  
12 requester, an overloaded cache, and an underloaded cache. The  
13 operation in total does involve three locations, a requester, a  
14 proximal cache, and a destination source cache. However, the  
15 information consists of mere requests, inquiries, and does not  
16 point directly or indirectly to yet another third alternative  
17 source cache of the web content data. In Jordan, the destination  
18 and source are one in the same. The requests may be also used as  
19 the inquiries as to whether or not the web content data is stored  
20 at a distal cache. Hence, Jordan's communicated information is  
21 different. For maintaining the caching table, Jordan's information  
22 may include URL requests, the requester, and the destination, but  
23 not URL requests, the destination, and another source. The polling  
24 inquires would not include the alternative source as with the tri-  
25 referenced associated routing information of claim 1. Jordan  
26 provides for mere URL requests or inquiries, whereas the present  
27 invention broadcasts actual tri-referenced routing information. The  
28 information is different, and hence, Jordan does not anticipate,

1 and information communicated ultimately serves different purposes,  
2 such as load sharing using caching tables as opposed to routing  
3 information migration, and hence, the arguments as to  
4 nonobviousness. Jordan solves the problem of load balancing using  
5 forward requests, polling inquires, and caching tables whereas the  
6 present invention solves the problem of migrating routing tables  
7 and does so by broadcasting tri-referenced associated routing  
8 information. With different problems solved, different objectives,  
9 and different solutions, Jordan does not remotely suggest the  
10 present invention.

11  
12 Specifically comparing apples to apples, Jordan teaches  
13 multicasting where a cooperative cache multicasts URL requests or  
14 inquiries to other caches. (Col 8 line 1) These URL requests may  
15 function as simple inquiries, such as, "do you have this  
16 information", and the answer may be "yes," indicated by merely  
17 sending the web content data in response. In so doing, each cache  
18 polls the remaining caches to maintain the caching tables. Jordan  
19 maintains a caching table by polling caches through bilateral bi-  
20 referenced communications. The present invention broadcasts  
21 unilateral tri-referenced routing information, so that, distal  
22 caches can maintain routing and forwarding tables. Jordan  
23 bilaterally multicasts bi-referenced unassociated inquires to  
24 maintain caching tables in proximal caches. The present invention  
25 unilaterally broadcasts tri-referenced associated routing  
26 information for maintaining forward and routing tables in distal  
27 caches. The two processes are completely different serving  
28 different objectives for solving different problems.



1  
2 Jordan is clear and teaches load balancing. "Direct requests  
3 155 are sent from the clients ... to cache server". (Col 5 line 55)  
4 "If an actual load imbalance is identified ... the load monitor  
5 initiates a shifting of forwarded requests from the overloaded  
6 cache to ... less loaded servers". (Col 6 line 3) "if the owner is  
7 currently overloaded ... the load monitor finds an underloaded  
8 cache ... and assign it as the new owner of the requested object".  
9 (Col 6 line 63) "The ownership information for the object in the  
10 caching table is updated". (Col 6 line 64). "The request can be  
11 forward ... to the new owner". (Col 7 line 3)  
12

13 The examination states that Jordan's request includes source  
14 address, destination address, forwarding address, next hop address,  
15 as disclosed in the request to an arbitrary cache or destination  
16 upon a cache miss wherein the new entry is created for the object  
17 in the caching table a routing or forwarding table (Col 6 L50-67,  
18 and Fig 2a).  
19

20 Is that really so? A search of specification reveals that the  
21 term "HOP" is not found at all. A search of the summary and  
22 preferred embodiment reveals that the term "route" is not used at  
23 all. Yet, to the examiner, it is apparently clear from these  
24 apparent phantom words. Within this cited text, none of these terms  
25 are mentioned at all, yet, this section is cited as the basis of  
26 the rejection. This is remarkable. Applicant appreciates that the  
27 technology is complex and involves many caches at many different  
28 locations serving different uses while communicating different

1 types of information. Nonetheless, precise and careful reading is  
2 required to fully understand the differences between Jordan and the  
3 present invention.

4  
5 The caching table shown in Fig 2a of Jordan includes objects  
6 (the URL) and "Ownership" that is, the caches A, B, C storing the  
7 web content data. Such specific A, B, and C caches are not  
8 arbitrary, as indicated by the examiner, but indicate exactly where  
9 the data can be found and exactly where the request can be  
10 forwarded for load balancing and sharing. It appears the examiner  
11 reads more in Jordan than what is really there.

12  
13 The plain full text does not read as the examiner indicates.  
14 "FIG. 3 shows an example of a logic flow for steps taken by the  
15 load monitor 120 in response to a request 125 from a cache server  
16 150 because of a cache miss. As depicted, in step 201, it checks to  
17 see if the requested object/partition can be found in the caching  
18 table. If not, in step, 202, a new entry is created for the  
19 object/partition and a cache server is assigned as its owner. After  
20 the entry is located in the caching table, in step 203, the  
21 forwarding frequency 1011 is updated, e.g., incremented by 1. The  
22 load monitor then examines the load table 102 to see if the owner  
23 is currently overloaded (and that the forwarding frequency 1011 is  
24 a significant contributor thereto), in step 204. If yes, in step  
25 205, the load monitor finds an underloaded (or less loaded) cache  
26 server and assign it as the new 10122 (or shared) owner 10122 of  
27 the requested object. The ownership information 1012 for the object  
28 in the caching table 101 is updated accordingly. Those skilled in

1 the art will appreciate that the logic flow could comprise a shared  
2 10123 or hierarchical ownership 1012 in the caching table 101 or  
3 other data structure employed. The request (possibly with a copy of  
4 the requested object) can then be forwarded 125 to a new sole 10122  
5 (or shared 10123) owner, in step 206. Alternatively, the new owner  
6 can be requested to obtain 115 an object copy from the originating  
7 object server, e.g., via the Internet 110." (Col 6 lines 50-66).  
8

9 As such, the examiner incorrectly cites a specific section of  
10 text standing for the proposition that "On the other hand, Jordan,  
11 in its clear context, explicitly teaches the process of  
12 transmitting routing information, (such as source address,  
13 destination address, forwarding address, next hop address, as  
14 disclosed in the request) to an arbitrary cache or destination upon  
15 a cache miss, wherein the new entry is created for the object in a  
16 caching table, or routing or forwarding table." In discussing  
17 Jordan, "in its clear context", the examiner uses the terms such as  
18 "source address", "destination address", "forwarding address",  
19 "forwarding table", yet a simple cursory examination of the cited  
20 text upon which the examiner relies, teaches no such things nor  
21 uses any of these terms. Where are these terms in the cited text?  
22 How possibly could one make this apparent leap, but through some  
23 kind of tortured reasoning? These terms used by the examiner are  
24 not in the cited text, nor suggested in any regard, yet asserted by  
25 the examiner, as "clear". This is remarkable. The record of the  
26 present prosecution is becoming so distorted by the examiner's  
27 unsupported assertions, that this record is quickly becoming, in  
28 and of itself, a strong indicator of nonobviousness.

1  
2 Jordan should be viewed from the exclusive perspective of a  
3 lone proximal cache, as dictated by the structure of claim 1 of the  
4 present invention. Jordan multicasts different information, that  
5 may be simple URL requests indicating a requester and the URL to a  
6 source of the URL data. This is opposed to broadcasting routing  
7 information associating an alternative source and a URL with a  
8 destination IPA, which does not even request the URL data. In  
9 Jordan, the URL request is communicated to a different location,  
10 that is, directly to a source of URL web content data for  
11 retrieving the URL content data. This is opposed to communicating  
12 to a destination cache that merely receives the routing information  
13 indicating an alternative source, which communication can then be  
14 used to build a forwarding and routing table. Jordan solves a  
15 different problem that is one of load balancing among like caches.  
16 This is opposed to solving the problem of migrating routing  
17 information for the purpose of building routing and forwarding  
18 tables in different arbitrary distal caches. With all kind due  
19 respect, Jordan does not remotely suggest the prevent invention.

20 Jordan multicasts polling bi-referenced inquiries from a  
21 proximal cache to destination caches that affirmatively respond in  
22 bilateral communications for maintaining a caching table in the  
23 proximal cache, which caching table is then used for forwarding URL  
24 requests to those destinations storing the URL data when a URL  
25 request frequency at the proximal cache is high for load balancing.

26  
27 The present invention of claim 1 broadcasts from the proximal  
28 cache to destination caches tri-referenced routing information in a

1 unilateral broadcast communication, where the routing information  
2 associates a source IPA with stored originating URL data or stored  
3 additional routing information to a source of stored URL data along  
4 with the destination IPA, so as to enable the maintenance of  
5 forwarding and routing tables in the destination caches as in  
6 claims 19 and 20.

7  
8 Jordan relies on like caches all with like caching tables and  
9 with like frequency monitoring, whereas the proximal cache of claim  
10 1 and the distal cache of claims 19 or 20 rely on a cooperation  
11 between differently operating types of caches. Jordan does not  
12 suggest such a bifurcated cache function. The present invention is  
13 not required to poll other caches. The present invention does not  
14 require load monitoring. The present invention does not require  
15 multicast bilateral communications. The present invention does not  
16 maintain limited caching tables restricted to a few caches for  
17 simple load sharing only among them through forwarding URL  
18 requests. The present invention enables the building of generalized  
19 routing and forwarding tables in arbitrary destination distal  
20 caches regardless of what web data is stored on the distal  
21 destination caches. The present invention enables cooperative  
22 caching about a network of cooperative caches without regard to the  
23 frequency of URL requests at any one cache. Jordan does not have  
24 these benefits. The alternative distal source cache may store and  
25 source the URL web content data through directed forwarding  
26 requests or the alternative distal source cache may indirectly  
27 point through hop routing to yet another more remote distal  
28 alternative source cache storing the URL web content data, as

1 indicating the equivalence between forwarding and routing, enabling  
2 any number of routing hops to locate the sought after web content  
3 data stored in any one of any number of cooperative caches disposed  
4 anywhere within a network. The present invention is a significant  
5 advancement in the art and enables a comprehensive generalized  
6 network-wide distributive caching solution.

7  
8       The cited references do not teach or remotely suggest  
9 broadcasting of tri-referenced associated routing information from  
10 a proximal cache to a destination distal cache, with the routing  
11 information associating URL web content data at an originating URL  
12 with an alternative distal source cache. The tri-reference routing  
13 information minimally includes: 1) Source IPA (where the web  
14 content data is cached); 2) Origination URL (identifying the  
15 original web content data); 3) Destination IPA (where the source  
16 IPA and Originating URL association are communicated for building  
17 at the destination IPA routing and forwarding table that directly  
18 or indirectly point to the URL web content data at the source IPA).  
19 The proximal IPA is a fourth bit of routing information. However,  
20 sometimes the proximal cache and the source cache are one in the  
21 same. When the destination cache receives this routing information,  
22 associating the original URL with the source IPA, a routing can be  
23 created in the destination cache associating the source IPA with  
24 the originating URL, so that, when a URL request is received by the  
25 destination cache, the destination can forward (or reroute) the  
26 request using the association between the request's URL to the  
27 source IPA, rather than the originator at the originating IPA  
28 originally storing the web content data indicated by the

1 originating URL. Hence, the tri-referenced information can be used  
2 to build a routing table in a destination cache. When the proximal  
3 cache at the proximal IPA broadcast the routing information to many  
4 destination caches, the network of cooperative caches can each  
5 build a forwarding and routing table for improved web  
6 communications. Such broadcasting of this specific tri-referenced  
7 associated routing information then enables the maintenance of  
8 forwarding and routing tables in arbitrary destination caches for  
9 forwarding and routing URL requests about a network of cooperative  
10 caches. Allowance of the claims is requested.

11  
12 Respectfully Submitted

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